

# **FINAL REPORT**

## **Echo Lake Watershed NPS Reduction Project**

Maine DEP 319 Program, Project # 2005 R-14

October 12th, 2006



Project Implementer: Kennebec County Soil & Water  
Conservation District

Contact: Jennifer McLean, Watershed Project Director

KCSWCD, 9 Green Street, Rm. 307

Augusta, ME 04330

tel: (207) 622-7847

Project Start Date: April 2005

Project Completion Date: September 2006



*This project was funded in part by the Maine DEP through a US EPA Nonpoint Source Grant under Section 319 of the federal Clean Water Act.*

## **Echo Lake Watershed NPS Reduction Project (#2005 R-14)**

Grantee: Kennebec County Soil & Water Conservation District

### **I. Project Overview**

Echo Lake is a medium-sized waterbody (1,037 ac surface) which lies mostly within the towns of Fayette and Mount Vernon in western Kennebec County. The lake is relatively deep (>100 ft) lake with an average flushing rate and exhibits relatively good water quality. The lake is included on Maine DEP's list of Nonpoint Source (NPS) Priority Watersheds, based on the threat of nonpoint source pollution from land use activities around the lake. The shoreline is largely developed, with 160 or more camps (mostly seasonal) and three summer youth camps on its shores.

The goal of the Echo Lake Watershed NPS Reduction Project was to reduce sediment and phosphorus loading in the lake by focusing best management practices (BMPs) on at least 21 medium and high-priority sites. In the NPS survey that preceded this grant, over 40 sites were identified. These were clustered mostly on the Fayette side of the watershed. A list of 21 candidate sites was selected from these, and of the selected sites, 13 were on Echo Lake Road, a 3-mile long gravel (now chip-sealed) road that hugs the western shore of the lake. The project began in April of 2005.

Like many shore roads that service a community of summer cottages, Echo Lake Road was poorly sited to begin with and presented a real challenge for maintenance and erosion control. The length of the road, along with the steep hillside shouldering the road on the west side and near absence of any shoulder on the east (shore) side, compounded the NPS problem. In addition to erosion on Echo Lake Road itself, runoff from steep driveways on the hillside all along Echo Lake Road was crossing the road and contributing to pollution in the lake. (attached aerial with contours and the 'before' pictures in the Attachments give a picture of the poor condition of this road at onset of project). The Town of Fayette was eager to address the entire road in one fell swoop and entered into a cost-share agreement in which the Town would pay for the lion's share of the work. As a result, all 13 of the previously identified sites were corrected, along with an additional 28 sites on this road alone.

Project publicity through the Town, the District and the Echo Lake Association led to interest from private landowners who have driveways on Echo Lake Road, as well as a large private camp on Skoglund Road. This was another long, badly designed gravel road descending to the east shore of the lake. Work with the private landowners resulted in another 6 NPS sites addressed, for a total of 47 sites in the Echo Lake Project. Along with the number of sites, the total match generated by the project also greatly exceeded expectations. These successes can be attributed to both the enthusiasm and financial capacity of the two largest landowners we worked with (Town of Fayette and Ms. Rondi Nelson) as well as the fact that a great many NPS sites were concentrated in one linear "mega-site" (Echo Lake Road), making every aspect of cost-share work - landowner contact, site visits, cost-share processing - that much more cost-effective. It is not often that we encounter so many bad sites that can be addressed as a grouping with one or two highly motivated landowners.

The 319 project activities resulted in a sediment load reduction of approx. 2.2 tons/yr and protection of approx. 2,500 ft of shoreline on Echo Lake.

## **II. Task Summary**

The following tasks were the responsibility of the KCSWCD. There were no paid partners in this project.

### **Task 1, Project Management**

*Workplan:* Signed contract with DEP, overall administration of the project, Semi-Annual Reports, Account Balance Reports, Final Project Report, Outcome Brochure.

*Completed:* all of the above, detailed in Deliverables list below

*Remarks:* Nothing remarkable. The major construction project (Echo Lake Road) was completed under the direction of Nate Sylvester, who left the District in 2006. Additional projects were implemented by field staff Jeff Fredenburg and Josh Platt.

### **Task 2, Steering Committee**

*Workplan:* Organize Steering Committee, including reps from Towns, Togus Pond Asscn., Echo Lake Association, and Maine DEP. Committee to meet 6 times during the project.

*Completed:* Only two Steering Committee meetings were held (in spring, summer 2005).

*Remarks:* Steering Committee Meetings were no longer needed once the Echo Lake Road project was in full swing. The sites along Echo Lake Road had already been identified as the priority NPS sites from the survey. Town engagement and Lake Association support was strong. Match was also more than sufficient in this project so there was no need to continue with meetings.

### Task 3, Design & Install BMPs at Selected Sites

*Workplan:* Plan and implement BMPs on at least 21 sites through cost-share agreements with landowners (following 319 GAG rules). Submit NPS Site Reports for all sites.

*Completed:* A total of 47 NPS sites were treated with BMPs. [Echo Lake Road (41 sites) + Merluzzi (1 site) + Nelson (5 sites)] All of these sites were related to gravel road problems. In the case of Echo Lake Road, the road is also the shoreline. A list of sites and costs can be found under Section IV, Project Outcome. A photo log and aerial of Echo Lake Road are in the Attachments.

*Remarks:* The town road (Echo Lake Road) took up the majority of construction budget, as expected, and brought significant match from the Town of Fayette. The Town Manager and Road Commissioner were exceptionally energetic and dedicated in this project. KCSWCD field staff made numerous site visits to work with the crew as they moved down the road. The crew readily accepted direction in implementing erosion control practices during construction. The BMPs consisted of installation of 15 armored culverts, 2,500 feet of ditchwork (in difficult, ledgy ground with minimal right of way), and treatment of 4,000 feet of gravel road (chip seal surface). A boat launch was also addressed. Because the road is in effect the shoreline (see attached photos), we report 2,500 feet of shoreline protected. In most shoreline stabilization work the erosion is coming from the lake via wave action. In this case, erosion and runoff was coming from the road and steep hill on the opposite side.

Having a public workshop on this road also led to interest from private landowners who have driveways on Echo Lake Road, as well as a large private camp. The rubber razor blade installation at the Merluzzi's drew attention from neighbors and resulted in additional calls from landowners and requests for assistance in sourcing and building the razor blades. The District procured a supply of conveyor belt rubber from a rock quarry and is on the lookout for other sources as interest from landowners continues. Steep driveways placed up against ledge and opening on to a sensitive area characterize the NPS problem around Echo Lake Rd. These sites

present a design challenge for year-round residents. Several other site visits were made, including one to a handicapped camp owner to advise on building a wheelchair-accessible trail on steep lakefront property.

#### Task 4, Publicity, Education and Outreach

*Workplan:* Project announcement letter, 4 news articles, 2 educational events/workshops.

*Completed:* Project announcement letter: hand-delivered by Echo Lake Assocn. to approx. 40 households on Echo Lake, May 2005; articles: 1) KCSWCD May-June '05 newsletter, 2)

*Summertime in the Belgrades*, 6/17/05, 3) Echo Lake Assocn. newsletter (project update)

7/13/05, 4) *Summertime in the Belgrades*, 7/28/06; events: 1) presentation at 2005 Lake Assocn.

mtg. 8/12/05; 2) camp road workshop, Fayette, 8/19/05; *Remarks:* An additional planned workshop at the 2006 Lake Assocn. meeting would have centered on answering questions and demonstrating the rubber razor blade application; however, the workshop had to be cancelled.

#### Task 5, Pollution Reduction Estimates

*Workplan:* Pollutants Controlled Report for every site implemented, reports submitted each Dec.

*Completed:* 2005 PCR submitted 12/31/05; 2006 PCR submitted with this report. Totals from the 47 sites are: load reduction of 2.2 tons/yr sediment and 1.0 lbs/yr phosphorus plus 2,500 feet of shorefront stabilized on Echo Lake Road.

*Remarks:* Echo Lake Road is essentially the western shoreline of Echo Lake. Shoreline stabilization work usually involves protection from wave erosion; in this case erosion was land-based.

#### Task 6, Provide Technical Assistance

*Workplan:* technical assistance to a minimum of 30 landowners, contractors, or businesses.

*Completed:* technical assistance to 14 landowners through work on cost-share agreements, site visits, and camp road workshops.

*Remarks:* The number of landowners we worked with fell short of the original goal in the workplan. This is due to the fact that we spent a significant portion of staff time working with a single public landowner (Town of Fayette) on a very large project. Project outreach involved residents around the lake but this did not entail site-specific assistance for everyone.

*Table 1. Site Visits in Echo Lake Watershed, 2005-2006*

<b>Landowner Name</b>	<b>Location of Site</b>	<b>Notes</b>
L. Bresloff	David Pond Rd., Fayette	2005 Site Visit: dangerous retaining wall needs to be removed, landowner will call when contractor begins for tech. assistance
J. Ouellette	Echo Lake Road, Fayette	2005 Site visit: assist with problem with steep driveway, losing gravel, rutting each year - rubber razor blades?
R. Nelson	Skoglund Rd, Mt. Vernon	2006 Site Visit: tech. assistance attached to 5 sites on Skoglund Road, cost-share agreement
J. Cuccaro	Kents Hill	2006 Site Visit: neighbors of Skoglund Road, design handicap-accessible trails
A. Merluzzi	Echo Lake Road, Fayette	2005 Site Visit: Echo Lake Road, Fayette; one of many steep driveways; water bar demonstration site, cost-share agreement
G. Ouellette	Echo Lake Road, Fayette	2006 Site Visit: Echo Lake Road
Town of Fayette	Echo Lake Road, Fayette	2005/2006 Site Visit: multiple site visits to develop work on Echo Lake Road, cost-share agreement

### **III. Deliverables Summary**

*Table 2. Summary of deliverables from the Echo Lake 319 Project*

<b>Deliverable</b>	<b>Date Submitted</b>	<b>Utility? High/Med/Low</b>
1. Signed project contract	KCSWCD signed 2/18/05 DEP signed 3/8/05	High. Necessary item.
2. Semi-Annual Reports (SARs)	each May, Nov.: 05/05/05 11/14/05 05/03/06	High. Good way to summarize for internal management, planning field work
3. Final Project Report	Date of this report	Med-High. Helpful to local partners to continue work; helpful for budgeting future grants. Assume helpful to DEP to assess workplan and implementer
4. Outcome Brochure	Date of this report	Low-Med. Questionable value for public outreach after life of grant if it can't be followed-up on (We do not have funds to do this). Good to have for our own publicity.
5. NPS Summary Reports (Site Reports)	Date reports sent: 1/24/06 (2 reports, Fayette, Merluzzi) 7/24/06 (1 report, Nelson)	High. Good record of site work with little added effort (info comes from cost-share agreement). Good to submit as completed, if possible.
6. Pollutants Controlled Report	2005 PCR submitted 12/31/05 2006 PCR submitted date of this report	Med. Necessary for grant reporting, although accuracy of models is questionable.

## **IV. Project Outcomes**

### *Major Outcomes*

The goals for number of NPS sites addressed and match from landowners were both greatly exceeded in this project. The high level of interest and organization of the Fayette Town Manager and Road Commissioner, coupled with diligence of the field staff, resulted in a very large and somewhat tricky road project being completed on time and within budget. The road project was greatly enhanced for NPS control due to the close cooperation of the road crew with the District field staff (Nate Sylvester). A second large road project in private ownership was also a model of camp road repair. The contractor (DEP certified Bill Rourke) did a beautiful job. The landowner was interested in total recovery of the degraded road and was in a position to pay for the best possible BMPs on 2,300 feet of road. This is an unusual situation. Normally, landowners are only able to fund work on a portion of their road at a time. These two large road projects contributed the bulk of environmental benefit in terms of load reductions. Overall the project abated an estimated 2.2 tons/yr sediment and 1.9 tons/yr of phosphorus into Echo Lake.

Due to the Echo Lake Road project, landowner interest began to focus on finding solutions to steep driveways with little room for retrofitting. The rubber razor blades are a solution for seasonal use (however, they do not hold up well under snowplowing). There are a dozen or more properties facing this problem on Echo Lake. Had there been more time and money in the project we could have explored other ways to treat these problem areas.

### *Environmental Results*

As a result of the Echo 319 project, the NPS load to the waterbody was reduced by an estimated 2.2 tons of sediment and 1.9 pounds<sup>1</sup> of phosphorus (results by site are reported in Table 3) The Echo Lake Road project reported a shorefront size of 2,500. Changes in water clarity and chemistry cannot be directly tied to the project activities over this relatively short period; however, we can say with some confidence that the impressive load reductions will help improve

---

<sup>1</sup> **Tons** of sediment and **pounds** of phosphorus often turn out to be the same (or close to the same) figure for the following reason: 1 lb = 0.0005 tons and coincidentally there is 1 lb of phosphorus for every 0.0005 lb of soil. There is a correction factor applied depending on soil particle size (peat = 1.5, clay = 1.15, silt = 1, sand = 0.85); however these factors tend to average out to 1:1.

water quality. The strong interest of the Town and Echo Lake Association bodes well for continued erosion control work in this watershed.

### *Lessons Learned*

Anticipate changes in quantitative targets: The workplan had called for technical assistance to at least 30 landowners. In reality, site visits and workshops combined totaled 14 participants.

Because work on the Echo Lake Road required numerous site visits by staff, personnel budget was depleted just as much as if we had worked with numerous landowners on different sites.

Recognizing this difference early on, we could have asked for a revision in the target number of landowners assisted.

Follow-up on Lake Assocn. needs: during the course of the project, we learned that the Lake Association was not well-equipped to deal with quick publicity for events and other reasons. For example, there was no electronic mailing list available in 2005. We could have requested that some District time be spent on helping build the capacity of the Lake Association.



Table 3. Echo 319 Project: NPS Sites treated with Best Management Practices (BMPs). Sites are tracked by name of cost-share agreement.

Landowner	Location	Type of Work	# Sites	Shoreline protected (ft)	Sediment reduced (tons/yr)	Phosphorus reduced (lbs/yr)	319 Grant payment (\$)	Match (\$)	Total Cost (\$)
Town of Fayette	Echo Lake Road, Fayette	Grading, ditching and culverts on town - maintained road (equiv of 41 sites) 1. Installation of 15 culverts with armored inlet and outlet (15 sites) 2. Construction of 2,500 ft of rock-lined ditch (12 sites) (This segment is immediately adjacent to shoreline; therefore we report 2,500 ft of shoreline) 3. Stabilization of 4,000 ft of road surface (13 sites) 4. Stabilized public boat launch using rip-rap stone and erosion control mulch (1 site)	41	2,500	1.5	1.3	24,000	37,500	61,500
Merluzzi	Echo Lake Road, Fayette	Installation of rubber water bars on steep driveway (approx. 70 ft, intersects Echo Lake Rd)	1	--	0.2	0.16	99	120	219
Nelson	Skoglund Road	Grading, ditching and culverts on 2,300 foot road (4 sites.) Practices implemented: <ul style="list-style-type: none"> <li>Ditching of entire length of road; several turnouts</li> <li>New culverts installed and rip rap stone placed in ditches/culverts</li> <li>Heavy road fabric placed under new gravel road surface..</li> </ul>	5	--	0.5	0.43	3,000	46,500	49,500
<b>TOTALS</b>			<b>47 sites</b>	<b>2,500 ft</b>	<b>2.2 tons/yr</b>	<b>1.9 lbs/yr</b>	<b>\$27,099</b>	<b>\$84,120</b>	<b>\$111,219</b>

## **V. Summary of Total Expenditures**

*Table 4. Actual expenses of the Echo 319 project (2005-2006)*

<b>Cost Category</b>	<b>A. 319 Workplan Budget (\$)</b>	<b>B. Actual Spent (\$)</b>	<b>Difference A-B</b>
Salary and Fringe	\$15,640	\$16,199	(\$559)
Supplies (includes printing, copying, postage)	\$1,000	\$477	\$523
Construction	\$26,550	\$27,099	(\$549)
Contractual	0	0	0
Travel	832	\$447	\$385
Equipment	0	0	0
Other	500	\$300	\$200
Indirect	NA	--	--
<b>TOTALS</b>	<b>\$44,522</b>	<b>\$44,522</b>	<b>\$0</b>

In Summer 2006 we saw that we could use some of the remaining funds to contribute to an additional CSA and thus increases total construction in the project. Therefore, supplies/other categories are shown slightly under-budget and construction slightly over-budget. "Construction" is actual payments to landowners for reimbursement under their cost-share agreements; it does not include staff time for site visits and CSA administration.

## **VI. Non-Federal Match Documentation/Certification**

Match was calculated as follows:

Actual cash payments from landowners to their contractors/suppliers for cost-share site work was verified by receipt of itemized bills from the contractors/suppliers. The grant contribution was subtracted from the total cost of construction and this amount was recorded as cash match by landowner last name. (See attached table.) The notation 'CSA' means cost-share agreement. Volunteer time was assigned the following values: \$10/hr for hand labor (e.g., planting, placing stone, etc.). Professional time was assigned one low estimate of \$20/hr. Professional time includes attendance at meetings. These two rates were chosen as low-end averages for the many types of manual and professional work descriptions listed by the Maine Commission for

Community Service. Using these rates ensures that our match reporting is conservative. The Excel output is attached to this report.

---

**ATTACHMENTS:**

Match Certification

Match Log

Photos of Selected Sites.

---

Match Certification

Echo Lake 319 (Maine DEP Project # 2005 R-14)

GRANTEE INFORMATION:

Name: Kennebec County Soil & Water Conservation District

Address: 9 Green Street, Room 307  
Augusta, ME 04330

Telephone: (207) 622-7847 X3

Contact: Dale Finseth                      Jennifer McLean  
Executive Director      Watershed Project Director

PROJECT INFORMATION:

Project ID: Echo Lake Watershed NPS Reduction Project  
(Maine DEP 319 Program, Project # 2005R-14)

Match amount planned under the Grant Agreement: \$36,604

Match amount claimed: \$85,773

CERTIFICATION STATEMENT:

I certify that the non-federal match detailed in the attached information were expended in the course of completing work described in the Grant Agreement for the Project referenced above, and that detailed documentation of the match information is on file and available for review at the Grantee address shown above.

---

s/Dale Finseth	10/13/06
Dale Finseth, Executive Director	Date

MATCH LOG: Echo Lake 319 Project (#2005 R-14)

			Construction	Labor	Supplies/Other	LINE TOTAL	MATCH TO DATE	\$ 35,404.00
Source	Explanation	Date	Amount	Amount	Amount	Amount		Remaining
Town of Fayette: Robinson, Tibbets, Walton, Latham	Project kick-off mtg 2hr X 4 X 20	5/9/05	\$ -	\$ 160.00		\$ 160.00	\$ 160.00	\$ 35,244.00
KCSWCD	mailing to Blatham	6/17/05			\$ 3.85	\$ 3.85	\$ 163.85	\$ 35,240.15
B Latham, ELLA	flyer deliver, visits; 3 hr X 20	6/28/05		\$ 60.00		\$ 60.00	\$ 223.85	\$ 35,180.15
KCSWCD	postage	7/7/05			\$1.20	\$ 1.20	\$ 225.05	\$ 35,178.95
EThomaS, ELLA	publish announce in newsletter	7/13/05		\$ 40.00		\$ 40.00	\$ 265.05	\$ 35,138.95
Summertime in Belgrades	publish & distribute article	7/17/05		\$ 40.00		\$ 40.00	\$ 305.05	\$ 35,098.95
Town of Fayette	Echo Lake Rd CSA	7/22/05	\$ 37,500.00			\$ 37,500.00	\$ 37,805.05	\$ (2,401.05)
B. Merluzzi	CSA	12/6/05	\$ 120.00			\$ 120.00	\$ 37,925.05	\$ (2,521.05)
R. Nelson	CSA	6/30/06	\$ 46,500.00			\$ 46,500.00	\$ 84,425.05	\$ (49,021.05)
Echo Lake Assocn	newsletter distribution	7/13/05		\$ 120.00		\$ 120.00	\$ 84,545.05	\$ (49,141.05)
KCSWCD	mileage unbilled	6/1/06			28.00	\$ 28.80	\$ 84,573.85	\$ (49,169.85)
Pike Industries	donate rubber belt for sites	12/6/05	\$ 1,200.00			\$ 1,200.00	\$ 85,773.85	\$ (50,369.85)
TOTALS			\$85,320	\$420.00	\$33.85		\$85,773.05	

**Echo Lake 319 Project (Maine DEP #2005R-14) Site Photographs: Echo Lake Rd., Fayette: BEFORE (early Spring 2005)**





**Site Photographs: Echo Lake Rd., Fayette: DURINIG AND AFTER CONSTRUCTION:**





## Other Sites: Merluzzi property and Skoglund Road



Steep driveway washing out onto Echo Lake Rd.



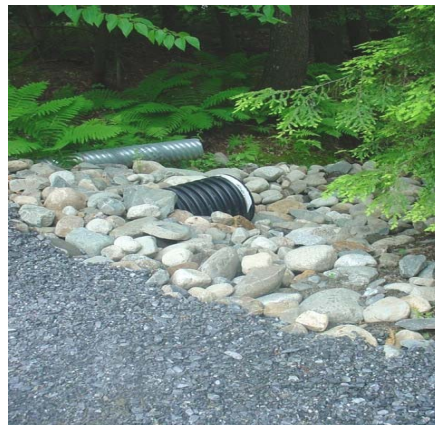
Installation of "rubber razor" waterbars to divert runoff into vegetated ditch



Old camp road was a heavy exporter of sediment after rainstorms.



Extensive ditching and culvert installation vastly improved the road drainage and stormwater treatment





--	--